

Published by:

National Center for PTSD
VA Medical Center (116D)
215 North Main Street
White River Junction
Vermont 05009-0001 USA

(802) 296-5132
FAX (802) 296-5135
Email: ncptsd@va.gov

All issues of the PTSD Research
Quarterly are available online at:
www.ptsd.va.gov

Editorial Members:

Editorial Director
Paula P. Schnurr, Ph.D.

Scientific Editor
Fran H. Norris, PhD

Managing Editor
Heather Smith, BA Ed

National Center Divisions:

Executive
White River Jct VT

Behavioral Science
Boston MA

Dissemination and Training
Menlo Park CA

Clinical Neurosciences
West Haven CT

Evaluation
West Haven CT

Pacific Islands
Honolulu HI

Women's Health Sciences
Boston MA

A Guide to the Literature on Partial PTSD

After the diagnosis of PTSD was formalized in 1980, clinicians and researchers applying the new criteria began to encounter the challenge of how to characterize individuals who had some symptoms of PTSD but failed to qualify for a formal diagnosis. Many of these individuals had multiple symptoms and notable functional impairment, yet they did not have enough symptoms in the required categories to be given a full diagnosis. In research, how to categorize these individuals became important; they were not “non-cases” or “no PTSD controls” in a meaningful sense, even if they technically did not have PTSD. How to characterize these individuals became important in practice too, especially when a formal diagnosis was required for insurance billing or to allow the delivery of care.

As a result, a literature began to emerge in which symptomatic individuals who failed PTSD diagnostic criteria were categorized as having “partial” (or “subthreshold” or “subsyndromal”) PTSD. In 1988, the National Vietnam Veterans Readjustment Study (NVVRS; Kulka et al., 1988; Weiss et al., 1992) was the first major study to report on the prevalence of partial PTSD. In doing so in such a visible way, this study arguably paved the way for important research over the coming decades that has helped further understanding of the consequences of exposure to traumatic events and increase attention to the needs of trauma survivors who might otherwise fall between the diagnostic cracks.

Diagnosis

One of the key issues in this research is how to diagnose partial PTSD. There is not complete agreement but there are commonalities across studies. All definitions have required the *Diagnostic and Statistical Manual (DSM)* exposure, duration, and (since *DSM-IV*) distress or impairment criteria, with some combination of symptoms; “B” (reexperiencing), “C” (avoidance/numbing), and “D” (hyperarousal) below refer to *DSM-III* or *DSM-IV* criteria unless otherwise indicated.

Paula P. Schnurr, Ph.D.

National Center for PTSD and Geisel School of Medicine
at Dartmouth

The NVVRS used expert consensus to assign a partial diagnosis based on responses to the Structured Clinical interview for *DSM-III-R*. A common strategy is to require that a person have at least one B, one C, and one D symptom (e.g., Breslau, Lucia, and Davis, 2004; Pietrzak, Goldstein, Southwick, and Grant, 2011a; Stein, Walker, Hazen, and Forde, 1997). Other strategies allow multiple ways of meeting partial criteria. Blanchard and colleagues (1994) required that either B and C criteria or B and D criteria be fully met. Schnurr, Friedman, and Rosenberg (1993) required either (1) at least one B, one C, and one D symptom; (2) B and D criteria, or (3) B, C, and D criteria, but with allowance for symptoms to be present at subthreshold levels. Mitchell, Mazzeo, Schlesinger, Brewerton, and Smith (2012) examined five variants, including one that did not require B symptoms, which is rare. The *DSM-5* does not specify formal diagnostic criteria for partial PTSD but indicates that it can be diagnosed as an “Other Specified Trauma-and Stressor-Related Disorder” (*DSM-5*; APA, 2013).

The role of avoidance in partial PTSD is one of the many questions that need to be addressed. Research has found that not having the required three C symptoms was the most common reason people not meet full criteria. Franklin, Sheeran, and Zimmerman (2002), who diagnosed partial PTSD as some PTSD symptoms along with significant impairment or distress, found that 97% of a large sample of outpatients met Criterion B and 63% met Criterion D, but only 39% met Criterion C. These authors did not specify whether failing C was due to a lack of 3 symptoms or a lack of avoidance, but new research on *DSM-5*—which requires at least one avoidance symptom—shows that failing to meet this new criterion is one of the most common reasons individuals who met *DSM-IV* criteria do not meet *DSM-5* criteria for full PTSD (Kilpatrick et al., 2013).

Continued on page 2



U.S. Department
of Veterans Affairs

Prevalence and Course

The variability in diagnostic criteria makes it difficult to compare prevalence across studies. It is clear, however, that partial PTSD is prevalent and sometimes even more prevalent than full PTSD. The NVVRS (1992) reported that the respective prevalences of lifetime *DSM-III-R* full and partial PTSD were 30.9% and 22.5% in men and 26.9% and 21.2% in women (Weiss et al., 1992). The respective prevalences of current full and partial PTSD were 15.2% and 11.1% in men and 8.5% and 7.8% in women. In a subsample of participants in the National Comorbidity Survey-Replication, the prevalence of lifetime PTSD was 9.7% and lifetime partial PTSD ranged from 9.8% to 11.6% depending on which of five diagnostic rules were used (Mitchell et al., 2012). The results of two other large epidemiological studies that used the same diagnostic criteria for partial PTSD (at least one B, one C, and one D symptom according to *DSM-IV*) differed substantially. Breslau et al. (2004) reported that full prevalence was 9.5% and partial prevalence was 27.6%. In contrast, Pietrzak et al. (2011a) reported full prevalence was 6.4% and partial prevalence was 6.6%; full/partial PTSD prevalence was 4.1%/4.5% in men and in 8.6%/8.6% women. It is not clear why the Breslau and Pietrzak studies differ so substantially in the prevalence of partial PTSD, but it is likely that the Pietrzak et al. results are most generalizable because they are based on a national sample, whereas the Breslau et al. results are based on a sample from Detroit. Taken together, the results of the Mitchell and Pietrzak studies, suggest that the lifetime prevalence of partial PTSD is somewhere between 6.6% and 9.8% in U.S. adults.

Fewer epidemiological studies have examined current PTSD. An exception is a study by Stein et al. (1997), who used the same partial diagnostic criteria as Pietrzak et al. (2011a) and Breslau et al. (2004) to examine the prevalence of full and partial current PTSD in a Canadian sample. Results were similar to Pietrzak et al.'s showing that full/partial prevalence was higher in women than in men: 2.7%/3.4% versus 1.2%/0.3%. Whether these results generalize to the U.S. is unknown, as is the answer to the question of whether the U.S. and Canadian data generalize to other countries, especially to developing nations.

Developing partial PTSD after exposure to a traumatic event may be a reflection of risk or of resilience — risk, in the sense that persistent partial symptoms may be a prodrome for delayed onset, and resilience, in the sense that an individual withstood the development of the full disorder. In fact both possibilities may be true, although partial PTSD appears to confer greater risk than resilience. A study of over 3,000 workers exposed to the attack on the World Trade Center (WTC) on September 11, 2001 (9/11) found that 19.4% of the participants who had subthreshold PTSD when initially assessed an average of roughly 2 years after the attack had full PTSD when assessed on subsequent occasions (Cukor, Wyka, Jayasinghe, and Difede, 2010). A meta-analysis reported that partial PTSD was associated with an almost 11-fold increased risk of delayed onset PTSD: 26.2% of individuals with partial PTSD versus 4.1% of individuals with fewer or no initial symptoms developed delayed onset (Smid, Mooren, van der Mast, Gersons, and Kleber, 2009).

Validity

“Does ‘subthreshold’ PTSD have any clinical relevance?” asked Zlotnick, Franklin, and Zimmerman in 2002. Actually, investigators had been asking that question and debating the answers since

research on the topic of partial PTSD first appeared. The short answer is “yes.” Individuals with partial PTSD differ in numerous ways from individuals who have been traumatized but do not have symptoms of PTSD (e.g., Breslau et al., 2004; Pietrzak, Goldstein, Southwick, and Grant, 2011b, 2011c; Pietrzak et al., 2012; Schnurr et al., 2000; Stein et al., 1997). But individuals with partial PTSD also sometimes differ from individuals who meet full diagnostic criteria (Breslau et al., 2004; Pietrzak et al., 2011b, 2011c, 2012; Schnurr et al., 2000; Stein et al., 1997). Like the literature on prevalence, the literature on differences between individuals with partial PTSD and those with either no PTSD or full PTSD is difficult to interpret given the variability in diagnostic criteria for partial PTSD. In general, individuals with partial PTSD fall between those with no PTSD, but this is a broad generalization with plenty of evidence that partial PTSD is sometimes closer to one or the other diagnostic extreme.

Zlotnick et al. (2002) answered their question by showing that individuals with partial PTSD had impaired functioning relative to traumatized no-PTSD controls according to the Global Assessment of Functioning scale, but did not differ on indicators of social and occupational functioning. A number of studies have found more pervasive functional impairment among individuals with partial PTSD relative to traumatized individuals without PTSD (e.g., Breslau et al., 2004; Pietrzak et al., 2012; Schnurr et al., 2000; Stein et al., 1997). Although individuals with full PTSD have greater impairment than those with partial PTSD (e.g., Breslau et al., 2004; Pietrzak et al., 2012; Schnurr et al., 2000; Stein et al., 1997), these studies are important because they show that partial PTSD is associated with increased burden and decreased quality of life.

Most of the research on risk factors for partial PTSD is based on cross-sectional designs that have found risk of developing partial PTSD, versus either full PTSD or no PTSD, to be associated with numerous risk factors related to the individual's demographic characteristics, prior trauma exposure, psychiatric history, exposure to the index event, and recovery environment (e.g., Pietrzak et al., 2011b, 2011c, 2012). However, an early prospective study suggested that premilitary personality predicted the development of full versus partial PTSD according to the Minnesota Multiphasic Personality Inventory (MMPI; Schnurr et al., 1993). Vietnam Veterans who developed full PTSD had higher social introversion scores relative to those who developed partial PTSD, but were comparable on other subscales. A more recent longitudinal study of 9/11 recovery workers at the WTC found that individuals with PTSD (vs. partial PTSD) 6 years after the attack were more likely to have had major depression 1 to 2 years after 9/11 and greater occupational exposure to 9/11 trauma (Cukor et al., 2011). In this study, the only factor that predicted partial PTSD versus no PTSD at 6 years was a history of trauma exposure before the 9/11 attack.

Partial PTSD is associated with substantial psychiatric and medical comorbidity (e.g., Fetzner, McMillan, and Asmundson, 2012; Pietrzak et al., 2011b, 2011c, 2012; Schnurr et al., 2000; von Känel et al., 2010; Yurgil et al., 2013). Few studies have focused on the neurobiology of partial PTSD. A recent study found that both PTSD and partial PTSD patients showed a distinctive pattern of electroencephalographic brain activation (increased right-sided activation in anterior and posterior regions) in response to a trauma-related picture that differed from the pattern observed in traumatized individuals without PTSD and nontraumatized controls (Rabe, Beauducel, Zöllner, Maercker, and Karl, 2006). Further investigation of the neurobiology of partial PTSD is needed.

Treatment

Although individuals with partial PTSD have sometimes been included with full cases in treatment studies, few studies have specifically examined the treatment of individuals with partial PTSD. A large study of Cognitive Processing Therapy in Veterans recently reported that those with partial PTSD responded similarly to those with full PTSD (Dickstein, Walter, Schumm, and Chard, 2013). Prevention is a different issue. A small study by Shalev et al. (2012) of recent trauma survivors who met symptom criteria for partial PTSD when studied within 30 days of a traumatic event found no difference at 5 months between those who received either Prolonged Exposure or Cognitive Therapy and those assigned to a waitlist. These findings suggest that efforts aimed to prevent the development of PTSD among partially symptomatic individuals may be unnecessary, but this hypothesis needs further investigation.

Recommendations and Future Directions

It is understandable given the existing evidence that partial PTSD was not included as a formal diagnosis in *DSM-5*. However, in order to further understanding of partial PTSD, it is necessary for research to help formalize diagnostic criteria so that results can be compared across studies. An examination of the latent structure of PTSD found that PTSD was best characterized as a dimensional disorder rather than one in which the categories of “PTSD” and “no PTSD” accurately captured the underlying symptom structure (Ruscio, Ruscio, and Keane, 2002). From this perspective, using the concept of partial PTSD in research and practice makes sense.

References

Kilpatrick, D.G., Resnick, H.S., Milanak, M.E., Miller, M.W., Keyes, K.M., and Friedman, M.J. (2013). National estimates of exposure to traumatic events and PTSD prevalence using *DSM-IV* and *DSM-5* criteria. *Journal of Traumatic Stress*, 26, 537-547. doi:10.1002/jts.21848

Ruscio, A.M., Ruscio, J. and Keane, T.M. (2002). The latent structure of posttraumatic stress disorder: A taxometric investigation of reactions to extreme stress. *Journal of Abnormal Psychology*, 111, 290-301. doi:10.1037//0021-843X.111.2.290

FEATURED ARTICLES

Blanchard, E.B., Hickling, E.J., Taylor, A.E., Loos, W.R., and Gerardi, R.J. (1994). Psychological morbidity associated with motor vehicle accidents. *Behavior Research and Therapy*, 32, 283-290. doi:10.1016/0005-7967(94)90123-6 Fifty victims of recent motor vehicle accidents (MVAs), who had sought medical attention after their accidents, were assessed for possible psychological morbidity as a result of the accident. Forty age, gender-matched controls were also assessed with the same instruments. Forty-six percent of the MVA victims met the criteria for current PTSD as a result of the accident while 20% showed a subsyndromal version (the reexperiencing symptom cluster plus either the avoidance/numbing cluster or the over-arousal cluster) of PTSD. Although all MVA victims showed some form of driving reluctance, only one met the criteria for driving phobia. Those MVA victims who met the criteria for PTSD or subsyndromal PTSD were significantly more likely to have experienced previous trauma, other than a serious MVA, and were

FEATURED ARTICLES *continued*

more likely ($P = 0.008$) to have previously met the criteria for PTSD as a result of that trauma. Forty-eight percent of MVA victims who met the criteria for current PTSD also met the criteria for current major depression. Significantly more current MVA-PTSDs had suffered previous major depressive episodes.

Breslau, N., Lucia, V.C., and Davis, G.C. (2004). Partial PTSD versus full PTSD: An empirical examination of associated impairment. *Psychological Medicine*, 34, 1205-1214. doi:10.1017/S0033291704002594 Background: Partial PTSD, employed initially in relation to Vietnam Veterans, has been recently extended to civilian victims of trauma. We examined the extent to which partial PTSD is distinguishable from full *DSM*-PTSD with respect to level of impairment. Method: A representative sample of 2,181 persons was interviewed by telephone to record lifetime traumatic events and to assess *DSM-IV* PTSD criteria. Partial PTSD was defined as $>$ or $=$ one symptom in each of three symptom groups (criteria B, C and D) and duration of $>$ or $=$ 1 month. Impairment in persons with PTSD and partial PTSD was measured by number of work-related and personal disability days during the 30-day period when the respondent was most upset by the trauma. Results: Compared to exposed persons with neither PTSD nor partial PTSD, increment in work-loss days associated with PTSD was 11.4 (S.E. $=$ 0.6) days and with partial PTSD, 3.3 (S.E. $=$ 0.4) days (adjusted for sex, education and employment). Similar disparities were found across other impairment indicators. Persons who fell short of PTSD criteria by one symptom of avoidance and numbing reported an increment of 5.0 (S.E. $=$ 0.7) work-loss days, 6.0 fewer than full PTSD. PTSD was associated with excess impairment, controlling for number of symptoms. A significantly lower proportion of persons with partial PTSD than full PTSD experienced symptoms for more than 2 years. A lower proportion of persons with partial PTSD than full PTSD had an etiologic event of high magnitude. Conclusions: PTSD identifies the most severe trauma victims, who are markedly distinguishable from victims with subthreshold PTSD.

Cukor, J., Wyka, K., Jayasinghe, N., and Difede, J. (2010). The nature and course of subthreshold PTSD. *Journal of Anxiety Disorders*, 24, 918-923. doi:10.1016/j.janxdis.2010.06.017 This study investigated rates of subthreshold PTSD and associated impairment in comparison to no PTSD and full PTSD and prospectively followed the course of subthreshold symptoms over 3 years. 3360 workers dispatched to the WTC site following 9/11 completed clinician interviews and self-report measures at three time points each 1 year apart. At Time 1, 9.7% of individuals met criteria for subthreshold PTSD. The no PTSD, subthreshold PTSD, and full PTSD groups exhibited significantly different levels of impairment, rates of current major depression diagnosis, and self-reported symptoms of depression. At Time 2, 29% of the initial sample with subthreshold PTSD continued to meet criteria for subthreshold or full PTSD; at Time 3, this was true for 24.5% of the initial sample. The study lends credence to the clinical significance of subthreshold PTSD and emphasizes that associated impairment may be significant and longstanding. It also confirms clinical differences between subthreshold and full PTSD.

Dickstein, B.D., Walter, K.H., Schumm, J.A., and Chard, K.M. (2013). Comparing response to cognitive processing therapy in military veterans with subthreshold and threshold posttraumatic stress disorder.

Journal of Traumatic Stress, 26, 703-709. doi:10.1002/jts.21869

Research suggests that subthreshold PTSD symptomatology is associated with increased risk for psychological and functional impairment, including increased risk for suicidal ideation. However, it does not appear that any studies to date have investigated whether subthreshold PTSD can effectively be treated with evidence-based, trauma-focused treatment. Accordingly, we tested response to cognitive processing therapy (CPT) in two groups of military Veterans receiving care at a Department of Veterans Affairs outpatient specialty clinic, one with subthreshold PTSD at pretreatment ($n = 51$) and the other with full, diagnostic PTSD ($n = 483$). Multilevel analysis revealed that both groups experienced a significant decrease in PTSD symptoms over the course of therapy (the full and subthreshold PTSD groups experienced an average decrease of 1.79 and 1.52 points, respectively, on the PTSD Checklist with each increment of time, which was coded from 0 at pretreatment to 13 at posttreatment). After controlling for pretreatment symptom severity, a between-groups difference was not found. These results suggest that CPT is an effective form of treatment among military Veterans, and that its effectiveness does not differ between subthreshold and threshold groups.

Franklin, C.L., Sheeran, T., and Zimmerman, M. (2002). Screening for trauma histories, posttraumatic stress disorder (PTSD), and subthreshold PTSD in psychiatric outpatients. *Psychological Assessment*, 14, 467-471. doi:10.1037/1040-3590.14.4.467 The ability of the Structured Clinical Interview for DSM-IV (SCID) PTSD module's screening question to identify individuals with PTSD or subthreshold PTSD was examined. First, the screen's sensitivity for detecting a trauma history was determined. Second, the incremental validity of a more thorough trauma assessment was examined by determining how many individuals responded negatively to the screen but then were diagnosed with PTSD or subthreshold PTSD. Last, the optimal SCID termination point for assessing subthreshold PTSD was determined. Using a trauma list increased the number of participants reporting a trauma; however, the SCID screen captured almost all individuals who had PTSD or subthreshold PTSD. When one screens for subthreshold PTSD, the SCID can be terminated on failure to meet Criterion B.

Kulka, R.A., Schlenger, W.E., Fairbank, J.A., Hough, R.L., Jordan, B.K., Marmar, C.R., et al. (1988). *Contractual report of findings from the National Vietnam Veterans Readjustment Study. Volume 1: Executive summary, description of findings, and technical appendices*. Research Triangle Park, North Carolina: Research Triangle Institute. Conducted in response to Public Law 98-160, the NVVRS is the most rigorous and comprehensive study to date of the prevalence of PTSD and other psychological problems in readjusting to civilian life among Vietnam Veterans. [Text, p. 1]

Mitchell, K.S., Mazzeo, S.E., Schlesinger, M.R., Brewerton, T.D., and Smith, B.N. (2012). Comorbidity of partial and subthreshold PTSD among men and women with eating disorders in the National Comorbidity Survey-Replication study. *International Journal of Eating Disorders*, 45, 307-315. doi:10.1002/eat.20965 **Objective:** The comorbidity of PTSD and eating disorders (EDs) is high among women but has been understudied in men. Little is known about the association between partial or subthreshold PTSD and EDs among

women or men. **Method:** This study included PTSD and ED data from male ($n = 2,382$) and female ($n = 3,310$) National Comorbidity Survey-Replication study participants. **Results:** The vast majority of women and men with anorexia nervosa, bulimia nervosa (BN), and binge eating disorder (BED) reported a history of interpersonal trauma. Rates of PTSD were significantly higher among women and men with BN and BED. Subthreshold PTSD was more prevalent than threshold PTSD among women with BN and women and men with BED. **Discussion:** Interpersonal forms of trauma, PTSD, and subthreshold/partial PTSD, were prevalent among men and women with EDs. Findings highlight the importance of assessing for trauma and PTSD in ED patients.

Pietrzak, R.H., Goldstein, R.B., Southwick, S.M., and Grant, B.F. (2011a). Prevalence and Axis I comorbidity of full and partial posttraumatic stress disorder in the United States: Results from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Anxiety Disorders*, 25, 456-465. doi:10.1016/j.janxdis.2010.11.010 The present study used data from the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions [NESARC] ($n = 34,653$) to examine lifetime Axis I psychiatric comorbidity of PTSD in a nationally representative sample of U.S. adults. Lifetime prevalences \pm standard errors of PTSD and partial PTSD were $6.4\% \pm 0.18$ and $6.6\% \pm 0.18$, respectively. Rates of PTSD and partial PTSD were higher among women ($8.6\% \pm 0.26$ and $8.6\% \pm 0.26$) than men ($4.1\% \pm 0.19$ and $4.5\% \pm 0.21$). Respondents with both PTSD and partial PTSD most commonly reported unexpected death of someone close, serious illness or injury to someone close, and sexual assault as their worst stressful experiences. PTSD and partial PTSD were associated with elevated lifetime rates of mood, anxiety, and substance use disorders, and suicide attempts. Respondents with partial PTSD generally had intermediate odds of comorbid Axis I disorders and psychosocial impairment relative to trauma controls and full PTSD.

Pietrzak, R.H., Goldstein, R.B., Southwick, S.M., and Grant, B.F. (2011b). Medical comorbidity of full and partial posttraumatic stress disorder in U.S. adults: Results from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *Psychosomatic Medicine*, 73, 697-707. doi:10.1097/PSY.0b013e3182303775 **Objective:** This study examined associations between lifetime trauma exposures, PTSD and partial PTSD, and past-year medical conditions in a nationally representative sample of U.S. adults. **Methods:** Face-to-face interviews were conducted with 34,653 participants in the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. Logistic regression analyses evaluated associations of trauma exposure, PTSD, and partial PTSD with respondent-reported medical diagnoses. **Results:** After adjustment for sociodemographic characteristics and comorbid Axis I and II disorders, respondents with full PTSD were more likely than traumatized respondents without full or partial PTSD (comparison group) to report diagnoses of diabetes mellitus, noncirrhotic liver disease, angina pectoris, tachycardia, hypercholesterolemia, other heart disease, stomach ulcer, human immunodeficiency virus seropositivity, gastritis, and arthritis (odds ratios [ORs] = 1.2-2.5). Respondents with partial PTSD were more likely than the comparison group to report past-year diagnoses of stomach ulcer, angina pectoris, tachycardia, and arthritis (ORs = 1.3-1.6). Men with full

and partial PTSD were more likely than controls to report diagnoses of hypertension (both ORs = 1.6), and both men and women with PTSD (OR = 1.8 and OR = 1.6, respectively) and men with partial PTSD (OR = 2.0) were more likely to report gastritis. The total number of lifetime traumatic event types was associated with many assessed medical conditions (ORs = 1.04-1.16), reducing the magnitudes and rendering some of the associations between PTSD status and medical conditions nonsignificant. **Conclusions:** Greater lifetime trauma exposure and PTSD are associated with numerous medical conditions, many of which are stress-related and chronic, in U.S. adults. Partial PTSD is associated with intermediate odds of some of these conditions.

Pietrzak, R.H., Schechter, C.B., Bromet, E.J., Katz, C.L., Reissman, D.B., Ozbay, F., et al. (2012). The burden of full and subsyndromal posttraumatic stress disorder among police involved in the World Trade Center rescue and recovery effort. *Journal of Psychiatric Research*, 46, 835-842. doi:10.1016/j.jpsychires.2012.03.011

Background: This study examined the prevalence, correlates, and perceived mental healthcare needs associated with subsyndromal PTSD in police involved in the WTC rescue and recovery effort. **Methods:** A total of 8,466 police completed an interview/survey as part of the WTC Medical monitoring and Treatment Program an average of four years after 9/11. **Results:** The past month prevalence of full and subsyndromal WTC-related PTSD was 5.4% and 15.4%, respectively. Loss of someone or knowing someone injured on 9/11 (odds ratios [ORs]=1.56-1.86), pre-9/11 stressors (ORs=1.30-1.50), family support (ORs=0.83-0.94), and union membership (ORs=0.50-0.52) were associated with both full and subsyndromal PTSD. Exposure to the dust cloud (OR=1.36), performing search and rescue work (OR=1.29), and work support (OR=0.89) were additionally associated with subsyndromal PTSD. Rates of comorbid depression, panic disorder, and alcohol use problems (ORs=3.82-41.74), and somatic symptoms and functional difficulties (ORs=1.30-1.95) were highest among police with full PTSD, with intermediate rates among police with subsyndromal PTSD (ORs=2.93-7.02; and ORs=1.18-1.60, respectively). Police with full and subsyndromal PTSD were significantly more likely than controls to report needing mental healthcare (41.1% and 19.8%, respectively, versus 6.8% in trauma controls). **Conclusions:** These results underscore the importance of a more inclusive and dimensional conceptualization of PTSD, particularly in professions such as police, as operational definitions and conventional screening cut-points may underestimate the psychological burden for this population. Accordingly, psychiatric clinicians should assess for disaster-related subsyndromal PTSD symptoms in disaster response personnel.

Schnurr, P.P., Ford, J.D., Friedman, M.J., Green, B.L., Dain, B.J., and Sengupta, A. (2000). Predictors and outcomes of posttraumatic stress disorder in World War II Veterans exposed to mustard gas. *Journal of Consulting and Clinical Psychology*, 68, 258-268. Current PTSD associated with participation in secret military tests of mustard gas during World War II was assessed in 363 male military Veterans who were randomly sampled from a registry developed by the Department of Veterans Affairs. Current prevalence was 32% for full PTSD and 10% for partial PTSD. Prevalence of PTSD varied as a function of risk and protective factors, including volunteering, physical symptoms during the tests, and prohibited disclosure. Prediction of partial PTSD was weaker than prediction of full PTSD.

Veterans with full PTSD reported poorer physical health, a higher likelihood of several chronic illnesses and health-related disability, greater functional impairment, and higher likelihood of health care use than those with no PTSD. Veterans with partial PTSD also had poorer outcomes than did Veterans with no PTSD in a subset of these domains. There is discussion of the traumatic elements of experimental mustard gas exposure, vulnerability to PTSD, and the relevance of these findings to understanding the broad range of outcomes associated with PTSD.

Schnurr, P.P., Friedman, M.J., and Rosenberg, S.D. (1993). Premilitary MMPI scores as predictors of combat-related PTSD symptoms. *American Journal of Psychiatry*, 150, 479-483. **Objective:** The authors used data collected before military service to assess predictors of combat-related lifetime symptoms of PTSD. **Method:** The subjects were 131 male Vietnam and Vietnam-era Veterans who had taken the MMPI in college and who were interviewed as adults with the Structured Clinical Interview for DSM-III-R. Scores on the basic MMPI scales were used to predict combat exposure, lifetime history of any PTSD symptoms given exposure, and lifetime PTSD classification (symptoms only, subthreshold PTSD, or full PTSD). **Results:** Group means on the MMPI scales were within the normal range. No scale predicted combat exposure. Hypochondriasis, psychopathic deviate, masculinity-femininity, and paranoia scales predicted PTSD symptoms. Depression, hypomania, and social introversion predicted diagnostic classification among subjects with PTSD symptoms. The effects persisted when amount of combat exposure was controlled for. **Conclusions:** Premilitary personality can affect vulnerability to lifetime PTSD symptoms in men exposed to combat.

Stein, M.B., Walker, J.R., Hazen, A.L., and Forde, D.R. (1997). Full and partial posttraumatic stress disorder: Findings from a community survey. *American Journal of Psychiatry*, 154, 1114-1119. **Objective:** Full and partial PTSD following trauma exposure were examined in a community sample in order to determine their prevalence and their relative importance and functional significance. **Method:** A standardized telephone interview with a series of trauma probes and a DSM-IV PTSD checklist was administered to a random sample of 1,002 persons in a mid-sized Midwestern Canadian city. The authors determined current (i.e., 1-months) prevalence rates of full PTSD, i.e., all DSM-IV criteria, and partial PTSD, i.e., fewer than the required number of DSM-IV criterion C symptoms (avoidance/numbing) or criterion D symptoms (increased arousal). Additional questions about interference with functioning were also posed. **Results:** The estimated prevalence of full PTSD was 2.7% for women and 1.2% for men. The prevalence of partial PTSD was 3.4% for women and 0.3% for men. Interference with work or school was significantly more pronounced in persons with full PTSD than in those with only partial symptoms, although the latter were significantly more occupationally impaired than traumatized persons without PTSD. **Conclusions:** These findings in an epidemiologic sample underscore observations from patient and military groups that many traumatized persons suffer from a subsyndromal form of PTSD. These persons with partial PTSD, although somewhat less impaired than persons with the full syndrome, nonetheless exhibit clinically meaningful levels of functional impairment in association with their symptoms. This subthreshold form of PTSD may be especially prevalent in women. Additional study of partial PTSD is warranted.

FEATURED ARTICLES *continued*

Weiss, D.S., Marmar, C.R., Schlenger, W.E., Fairbank, J.A., Jordan, B.K., Hough, R.L., et al. (1992). The prevalence of lifetime and partial post-traumatic stress disorder in Vietnam theater Veterans. *Journal of Traumatic Stress*, 5, 365-376. doi:10.1002/jts.2490050304

A complete understanding of the consequences of service in a war zone includes examining the lifetime and current prevalence of PTSD, and of partial PTSD. Cases of partial PTSD are persons who have clinically significant symptoms of PTSD, but who do not meet the full diagnostic criteria. The NVVRS estimated the lifetime prevalence of PTSD to be 30.9% among male theater Veterans, 26% among females; lifetime prevalence of partial PTSD was an additional 22.5% and 21.2%, respectively; current prevalence of partial PTSD was 11.1% in males and 7.8% in females. NVVRS findings indicate that of the 1.7 million Veterans who ever experienced significant symptoms of PTSD after the Vietnam war, approximately 830,000 (49%) still experience clinically significant distress and disability from symptoms of PTSD. The contribution of partial PTSD represents an estimated additional 350,000 Veterans.

Zlotnick, C., Franklin, C.L., and Zimmerman, M. (2002). Does “subthreshold” posttraumatic stress disorder have any clinical relevance? *Comprehensive Psychiatry*, 43, 413-419. The present report examined the extent to which subthreshold PTSD (without lifetime PTSD) and full PTSD are associated with impairment or distress, controlling for comorbidity (i.e., major depression and panic disorder) in a sample of treatment-seeking psychiatric patients. Patients were administered diagnostic interviews and assessed for psychosocial impairment and whether or not they desired treatment for their PTSD symptoms. No significant differences were found between patients with full PTSD ($N = 156$) and those with subthreshold PTSD ($N = 56$) in degree of impairment (i.e., social and work functioning, as well as number of suicide attempts). In contrast, those with full PTSD had significantly more psychiatric hospitalizations and worse global functioning and were more likely to want treatment for their PTSD symptoms compared to those with subthreshold PTSD, albeit the majority of patients with subthreshold PTSD wanted treatment for their PTSD symptoms. These findings, like past research, suggest that subthreshold PTSD is associated with levels of social and work morbidity comparable to full PTSD. However, the report also underscores the difficulties in identifying a set of clinical criteria that clearly delineates between full PTSD and subthreshold PTSD.

ADDITIONAL CITATIONS

American Psychiatric Association (2013). *Diagnostic and statistical manual of mental disorders, Fifth Edition*. Arlington, VA: American Psychiatric Association. The American Psychiatric Association's *Diagnostic and Statistical Manual of Mental Disorders (DSM)* is a classification of mental disorders with associated criteria designed to facilitate more reliable diagnoses of these disorders. With successive editions over the past 60 years, it has become a standard reference for clinical practice in the mental health field. Since a complete description of the underlying pathological processes is not possible for most mental disorders, it is important to emphasize that the current diagnostic criteria are the best available description of how mental disorders are expressed and can be recognized by trained clinicians. *DSM* is intended to serve as a practical, functional, and

ADDITIONAL CITATIONS *continued*

flexible guide for organizing information that can aid in the accurate diagnosis and treatment of mental disorders. It is a tool for clinicians, an essential educational resource for students and practitioners, and a reference for researchers in the field. [PREFACE]

Cukor, J., Wyka, K., Mello, B., Olden, M., Jayasinghe, N., Roberts, J., et al. (2011). The longitudinal course of PTSD among disaster workers deployed to the World Trade Center following the attacks of September 11th. *Journal of Traumatic Stress*, 24, 506-514. doi:10.1002/jts.20672 This study examined the long-term mental health outcomes of 2,960 non-rescue disaster workers deployed to the WTC site in New York City following the 9/11 terrorist attacks. Semistructured interviews and standardized self-report measures were used to assess the prevalence of PTSD and other psychopathology 4 and 6 years after the attacks. Clinician-measured rates of PTSD and partial PTSD 4-years posttrauma were 8.4% and 8.9%, respectively, in a subsample of 727 individuals. Rates decreased to 5.8% and 7.7% for full and partial PTSD 6 years posttrauma. For the larger sample, self-report scores revealed probable PTSD and partial PTSD prevalence to be 4.8% and 3.6% at 4 years, and 2.4% and 1.8% at 6 years. Approximately 70% of workers never met criteria for PTSD. Although PTSD rates decreased significantly over time, many workers remained symptomatic, with others showing delayed-onset PTSD. The strongest predictors of ongoing PTSD 6 years following 9/11 were trauma history (odds ratio (OR) = 2.27, 95% confidence interval (CI) [1.06, 4.85]); the presence of major depressive disorder 1 to 2 years following the trauma (OR = 2.80, 95% CI [1.17, 6.71]); and extent of occupational exposure (OR = 1.31, 95% CI [1.13, 1.51]). The implications of the findings for both screening and treatment of disaster workers are discussed.

Fetzner, M.G., McMillan, K.A., and Asmundson, G.J.G. (2012). Similarities in specific physical health disorder prevalence among formerly deployed Canadian Forces Veterans with full and subsyndromal PTSD. *Depression and Anxiety*, 29, 958-965. doi:10.1002/da.21976 *Background:* The link between PTSD and deleterious physical health consequences among previously deployed military Veterans has been well documented. Research has focused primarily on investigating prevalence rates of physical health disorders among individuals with PTSD. Far less research has compared prevalence rates of specific physical health disorders among individuals with full and subsyndromal PTSD. The current study investigated differences in the prevalence of seven specific categories of physical health disorders (i.e., musculoskeletal, circulatory, endocrine, respiratory, gastrointestinal, neurological, and other physical health disorders) among individuals with full PTSD, subsyndromal PTSD, and no PTSD (i.e., controls). *Methods:* Participants were from a sample of Canadian Forces Veteran's Affairs clients ($n = 990$; 96.7% men) who were previously deployed to an overseas combat theatre. *Results:* Logistic regressions indicated four categories of physical health conditions (musculoskeletal, neurological, gastrointestinal, and other physical health disorders) were more likely to be present among those with full PTSD compared to those in the control group. Further, five physical health disorder categories (musculoskeletal, neurological, respiratory, gastrointestinal, and other physical health disorders) were more likely to be present among those with subsyndromal PTSD when compared to those in the control group. There were no observed significant differences between full and subsyndromal PTSD.

Conclusions: Current results suggest similar patterns of specific physical health disorder prevalence among those with full and subsyndromal PTSD, which differ consistently from patterns of specific physical health disorders among those in the control group. Comprehensive results, implications, and directions for future research will be discussed.

Pietrzak, R.H., Goldstein, R.B., Southwick, S.M., and Grant, B.F. (2011c). Personality disorders associated with full and partial posttraumatic stress disorder in the U.S. population: Results from Wave 2 of the National Epidemiologic Survey on Alcohol and Related Conditions. *Journal of Psychiatric Research*, 45, 678-686. doi:10.1016/j.jpsychires.2010.09.013

Background: While it is well known that personality disorders are associated with trauma exposure and PTSD, limited nationally representative data are available on DSM-IV personality disorders that co-occur with PTSD and partial PTSD. *Methods:* Face-to-face interviews were conducted with 34,653 adults participating in the Wave 2 National Epidemiologic Survey on Alcohol and Related Conditions. Logistic regression analyses controlling for sociodemographics and additional psychiatric comorbidity evaluated associations of PTSD and partial PTSD with personality disorders. *Results:* Prevalence rates of lifetime PTSD and partial PTSD were 6.4% and 6.6%, respectively. After adjustment for sociodemographic characteristics and additional psychiatric comorbidity, respondents with full PTSD were more likely than trauma controls to meet criteria for schizotypal, narcissistic, and borderline personality disorders (ORs = 2.1-2.5); and respondents with partial PTSD were more likely than trauma controls to meet diagnostic criteria for borderline (OR = 2.0), schizotypal (OR = 1.8), and narcissistic (OR = 1.6) personality disorders (PDs). Women with PTSD were more likely than controls to have obsessive-compulsive PD. Women with partial PTSD were more likely than controls to have antisocial PD; and men with partial PTSD were less likely than women with partial PTSD to have avoidant PD. *Conclusions:* PTSD and partial PTSD are associated with borderline, schizotypal, and narcissistic personality disorders. Modestly higher rates of obsessive-compulsive PD were observed among women with full PTSD, and of antisocial PD among women with partial PTSD.

Rabe, S., Beauducel, A., Zöllner, T., Maercker, A., and Karl, A. (2006). Regional brain electrical activity in posttraumatic stress disorder after motor vehicle accident. *Journal of Abnormal Psychology*, 115, 687-698. doi:10.1037/0021-843X.115.4.687 This study examined whether patients with PTSD related to MVAs would show an abnormal pattern of electroencephalographic (EEG) alpha asymmetries, which has been proposed for particular types of anxiety. Patients with PTSD ($n = 22$) or subsyndromal PTSD ($n = 21$), traumatized controls without PTSD (non-PTSD with MVA; $n = 21$), and healthy controls without MVA ($n = 23$) underwent measurement of EEG activity during baseline and exposure to a neutral, a positive, a negative, and an accident-related picture. Differences in brain asymmetry between groups were observed only during exposure to trauma-related material. PTSD and subsyndromal PTSD patients showed a pattern of enhanced right anterior and posterior activation, whereas non-PTSD with MVA participants showed the opposite pattern. Furthermore, posterior asymmetry in nontraumatized healthy controls varied with gender, with female participants showing a pattern of higher right posterior activation. The results support the hypothesis that symptomatic MVA survivors are characterized by a

pattern of right hemisphere activation that is associated with anxious arousal and symptoms of PTSD during processing of trauma-specific information.

Shalev, A.Y., Ankri, Y., Israeli-Shalev, Y., Peleg, T., Adessky, R., and Freedman, S. (2012). Prevention of posttraumatic stress disorder by early treatment: Results from the Jerusalem Trauma Outreach and Prevention Study. *Archives of General Psychiatry*, 69, 166-176. doi:10.1001/archgenpsychiatry.2011.127 *Context:* Preventing PTSD is a pressing public health need. *Objectives:* To compare early and delayed exposure-based, cognitive, and pharmacological interventions for preventing PTSD. *Design:* Equipoise-stratified randomized controlled study. *Setting:* Hadassah Hospital unselectively receives trauma survivors from Jerusalem and vicinity. *Participants:* Consecutively admitted survivors of traumatic events were assessed by use of structured telephone interviews a mean (SD) 9.61 (3.91) days after the traumatic event. Survivors with symptoms of acute stress disorder were referred for clinical assessment. Survivors who met PTSD symptom criteria during the clinical assessment were invited to receive treatment. *Interventions:* Twelve weekly sessions of prolonged exposure (PE; $n = 63$), or cognitive therapy (CT; $n = 40$), or double blind treatment with 2 daily tablets of either escitalopram (10 mg) or placebo (selective serotonin reuptake inhibitor/placebo; $n = 46$), or 12 weeks in a waiting list group ($n = 93$). Treatment started a mean (SD) 29.8 (5.7) days after the traumatic event. Waiting list participants with PTSD after 12 weeks received PE a mean (SD) 151.8 (42.4) days after the traumatic event (delayed PE). *Main Outcome Measure:* Proportion of participants with PTSD after treatment, as determined by the use of the Clinician-Administered PTSD Scale (CAPS) 5 and 9 months after the traumatic event. Treatment assignment and attendance were concealed from the clinicians who used the CAPS. *Results:* At 5 months, 21.6% of participants who received PE and 57.1% of comparable participants on the waiting list had PTSD (odds ratio [OR], 0.21 [95% CI, 0.09-0.46]). At 5 months, 20.0% of participants who received CT and 58.7% of comparable participants on the waiting list had PTSD (OR, 0.18 [CI, 0.06-0.48]). The PE group did not differ from the CT group with regard to PTSD outcome (OR, 0.87 [95% CI, 0.29-2.62]). The PTSD prevalence rates did not differ between the escitalopram and placebo subgroups (61.9% vs 55.6%; OR, 0.77 [95% CI, 0.21-2.77]). At 9 months, 20.8% of participants who received PE and 21.4% of participants on the waiting list had PTSD (OR, 1.04 [95% CI, 0.40-2.67]). Participants with partial PTSD before treatment onset did similarly well with and without treatment. *Conclusions:* Prolonged exposure, CT, and delayed PE effectively prevent chronic PTSD in recent survivors. The lack of improvement from treatment with escitalopram requires further evaluation. Trauma-focused clinical interventions have no added benefit to survivors with subthreshold PTSD symptoms.

Smid, G.E., Mooren, T.T.M., van der Mast, R.C., Gersons, B.P.R., and Kleber, R.J. (2009). Delayed posttraumatic stress disorder: Systematic review, meta-analysis, and meta-regression analysis of prospective studies. *Journal of Clinical Psychiatry*, 70, 1572-1582. doi:10.4088/JCP.08r04484 *Objective:* Prevalence estimates of delayed PTSD have varied widely in the literature. This study is the first to establish the prevalence of delayed PTSD in prospective studies and to evaluate associated factors through meta-analytic techniques. *Data Sources:* Studies were located by an electronic

search using the databases EMBASE, MEDLINE, and PsycINFO. Search terms were posttraumatic stress disorder [include all subheadings] AND (delayed OR prospective OR longitudinal OR follow-up). Results were limited to journal articles published between 1980 and April 4, 2008. *Study Selection:* We included longitudinal, prospective studies of humans exposed to a potentially traumatic event that assessed participants at 1 to 6 months after the event, that included a follow-up of at least 12 months after the event, and that specified rates of new onset and remission between assessments in study completers. *Data Extraction:* Data were extracted concerning the study design, demographic features, and event-related characteristics and the number of PTSD cases at first assessment, the number of PTSD cases among study dropouts, and the number of new event-related PTSD cases at each subsequent assessment among study completers. Data from 24 studies were included. Four of these provided additional data on initial subthreshold PTSD and subsequent risk of delayed PTSD. *Data Synthesis:* The proportion of PTSD cases with delayed PTSD was 24.8% (95% CI = 22.6% to 27.2%) after adjusting for differences in study methodology, demographic features, and event-related characteristics. Military combat exposure, Western cultural background, and lower cumulative PTSD incidence were associated with delayed PTSD. Participants with initial subthreshold PTSD were at increased risk of developing delayed PTSD. *Conclusions:* Delayed PTSD was found among about a quarter of PTSD cases and represents exacerbations of prior symptoms.

Von Känel, R., Kraemer, B., Saner, H., Schmid, J.-P., Abbas, C.C., and Bègré, S. (2010). Posttraumatic stress disorder and dyslipidemia: Previous research and novel findings from patients with PTSD caused by myocardial infarction. *The World Journal of Biological Psychiatry*, 11, 141-147. doi:10.3109/15622970903449846 *Objectives:* Based on a brief systematic review suggesting dyslipidemia in PTSD, we studied, for the first time, levels of blood lipids in patients with a DSM-IV diagnosis of PTSD caused by myocardial infarction (MI). *Methods:* Study participants were eight patients with full PTSD, eight patients with subsyndromal PTSD, and 31 patients with no PTSD who were diagnosed using the Clinician-Administered PTSD Scale (CAPS) interview after a mean of 32±8 months after MI. Levels of total cholesterol, low-density lipoprotein-cholesterol, triglycerides, and high-density lipoprotein-cholesterol (HDL-C) were determined in plasma. *Results:* Patients with full PTSD had lower HDL-C than patients with subsyndromal PTSD ($P = 0.044$) and those with no PTSD ($P = 0.014$) controlling for sex, body mass index, and statin equivalent dosage. Moreover, HDL-C levels were inversely associated with PTSD total symptoms ($r = -0.33$, $P = 0.027$), re-experiencing symptoms ($r = -0.32$, $P = 0.036$), and avoidance symptoms ($r = -0.34$, $P = 0.025$). There were no significant associations of PTSD diagnostic status and symptomatology with the three other lipid measures. *Conclusion:* Chronic PTSD caused by MI was associated with lower plasma levels of HDL-C. The finding concurs with the notion of dyslipidemia partially underlying the atherosclerotic risk in individuals with PTSD caused by different types of trauma.

Yurgil, K.A., Barkauskas, D.A., Vasterling, J.J., Nievergelt, C.M., Larson, G.E., Schork, N.J., et al. (2014). Association between traumatic brain injury and risk of posttraumatic stress disorder in active-duty Marines. *JAMA Psychiatry*, 71, 149-157. doi:10.1001/jamapsychiatry.2013.3080 *Importance:* Whether traumatic brain injury (TBI) is a risk factor for PTSD has been difficult to determine because of the prevalence of comorbid conditions, overlapping symptoms, and cross-sectional samples. *Objective:* To examine the extent to which self-reported predeployment and deployment-related TBI confers increased risk of PTSD when accounting for combat intensity and predeployment mental health symptoms. *Design, Setting, and Participants:* As part of the prospective, longitudinal Marine Resiliency Study (June 2008 to May 2012), structured clinical interviews and self-report assessments were administered approximately 1 month before a 7-month deployment to Iraq or Afghanistan and again 3 to 6 months after deployment. The study was conducted at training areas on a Marine Corps base in southern California or at Veterans Affairs San Diego Medical Center. Participants for the final analytic sample were 1648 active-duty Marine and Navy servicemen who completed predeployment and postdeployment assessments. Reasons for exclusions were nondeployment ($n = 34$), missing data ($n = 181$), and rank of noncommissioned and commissioned officers ($n = 66$). *Main Outcomes and Measures:* The primary outcome was the total score on the Clinician-Administered PTSD Scale (CAPS) 3 months after deployment. *Results:* At the predeployment assessment, 56.8% of the participants reported prior TBI; at postdeployment assessment, 19.8% reported sustaining TBI between predeployment and postdeployment assessments (ie, deployment-related TBI). Approximately 87.2% of deployment-related TBIs were mild; 250 of 287 participants (87.1%) who reported posttraumatic amnesia reported less than 24 hours of posttraumatic amnesia (37 reported ≥ 24 hours), and 111 of 117 of those who lost consciousness (94.9%) reported less than 30 minutes of unconsciousness. Predeployment CAPS score and combat intensity score raised predicted 3-month postdeployment CAPS scores by factors of 1.02 ($P < .001$; 95% CI, 1.02-1.02) and 1.02 ($P < .001$; 95% CI, 1.01-1.02) per unit increase, respectively. Deployment-related mild TBI raised predicted CAPS scores by a factor of 1.23 ($P < .001$; 95% CI, 1.11-1.36), and moderate/severe TBI raised predicted scores by a factor of 1.71 ($P < .001$; 95% CI, 1.37-2.12). Probability of PTSD was highest for participants with severe predeployment symptoms, high combat intensity, and deployment-related TBI. Traumatic brain injury doubled or nearly doubled the PTSD rates for participants with less severe predeployment PTSD symptoms. *Conclusions and Relevance:* Even when accounting for predeployment symptoms, prior TBI, and combat intensity, TBI during the most recent deployment is the strongest predictor of postdeployment PTSD symptoms.